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A study on nutritional status and environmental conditions of school children residing in social welfare hostels in urban area of a South Indian city

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ABSTRACT

Background: Nutrition plays a vital role, as inadequate nutrition during childhood may lead to malnutrition, growth retardation, reduced work capacity and poor mental and social development. The school age period is nutritionally significant so this study aims is to evaluate the present scenario of nutritional status and environmental conditions of schedule caste school children residing in social welfare hostels.

Methods: A community-based cross sectional study was taken up in 9 social welfare hostels in urban Vijayawada city. 312 students were studied in a period of one year, from October 2012 to October 2013. Nutritional status of children was assessed by anthropometric measurements viz BMI, Hb levels. Environmental conditions of the hostel were assessed after thorough inspection of all the environmental conditions. Data was analysed using SPSSv20.

Results: Prevalence of underweight was more in boys compared to girls with (27.9%) of boys with grade III thiness as compared to (11.50%) of girls and overall prevalence of underweight of 39.1% in boys as compared to 31.1% girls. Overall prevalence of anaemia was found out to be 97.7% with girls 53.5% and 44.2% in boys. Overcrowding is seen in all the hostels studied. All the rooms are adequately ventilated, and lighting was adequate. Sanitation is found to be satisfactory.

Conclusions: This study found out that prevalence of anaemia (97.7%) and malnourishment was high in majority of school children in social welfare hostels.

Keywords: Social welfare hostels, Underweight, Anemia, Sanitation

INTRODUCTION

Children are not only divine gifts but also the mirror of a nation and hope of the world. They are the country's biggest human investment for development. It is rather unfortunate that even after 66 years of Independence; our country had made little progress in improving the health condition of our school children when compared to the developed countries. Quality of life of school children, by all standards continues to be poor more so in rural areas and urban slums. ¹

The importance of school health has been acknowledged across countries since the beginning of 20th century. In several developed countries, school health programs have evolved during the post–2nd world war period and addressed nutritional and physical-fitness aspects. This was in response to poor nutritional status among lower middle class and working-class children.²

India is a country with 16% of scheduled castes. Scheduled castes are spread in all parts of India. Scheduled castes are those castes/races which have been

specified in a list in according with article 341 of our constitution. In India child health care problem in scheduled caste is more than of other castes. Due to poverty and other causes these people cannot help living amidst squalor and dirt, their houses are generally small, hardly any proper ventilation. Their poverty, malnutrition makes them fall an easy prey to various diseases with consequent heavy mortality.³

Nutrition plays a vital role, as inadequate nutrition during childhood may lead to malnutrition, growth retardation, reduced work capacity and poor mental and social development. The school age period is nutritionally significant because this is the prime time to build up body stores of nutrients in preparation for rapid growth of adolescence. In children, protein/calorie deficient diet results in underweight, wasting and lowered resistance to infection, stunted growth and impaired cognitive development and learning.⁴

Provision of hostels for the children hailing from oppressed sections of the community like scheduled castes, scheduled tribes and other backward classes is an important social welfare measure. The role of these hostels in their education advancement is considerable. To achieve this objective, the Government of Andhra Pradesh has started many social welfare hostels and at present, there are 2313 hostels functioning in the A.P state with scheduled caste children comprising 70% of the hostel inmates.⁵

This present study was conducted in urban area of Vijayawada in Krishna district, Andhra Pradesh to evaluate the present scenario of nutritional status and environmental conditions of schedule caste school children residing in social welfare hostels.

Aim and objectives

- To evaluate the nutritional status of school children belonging to schedule caste residing in social welfare hostels
- To evaluate the body mass index (BMI) status of the study participants
- To assess anaemic status among study participants by hemoglobin estimation
- To assess the environmental conditions of the welfare hostels.

METHODS

Design of study: cross sectional study

Study area: The present study is a community-based study, taken up in 9 social welfare hostels in urban Vijayawada city, the third largest city in Andhra Pradesh after Hyderabad and Visakhapatnam with an area of 261.88km². It is located on the banks of river Krishna the city has a population of 10, 58,000.⁶

Study population: All scheduled caste students in 9 social welfare hostels.

Sample size: 312 students from 9 social welfare hostels in urban Vijayawada, Krishna district.

Study period: The study was conducted for a period of one year, from October 2012 to October 2013.

Inclusion criteria: All the schedule caste children in 9 social welfare hostels in urban Vijayawada.

Exclusion criteria: Students other than schedule caste were not included and schedule caste students who were absent at the time of visit to the respective hostel.

Study instruments: Pre-designed, pre-tested, semi-structured questionnaire, stethoscope, weighing machine, measuring tape, Stadiometer (measuring rod), pen-torch, calorimeter etc.

Nutritional status: Nutritional status of children was assessed by Anthropometric measurements viz height, weight, BMI Hb levels.

Anthropometry

Height: Stadiometer (measuring rod) capable of measuring to an accuracy of 0.1 cm was used to assess height of the subjects. The subject was made to stand without footwear with the feet parallel and with heels, buttocks, shoulders, and occiput touching the measuring rod, hands hanging by the sides. The head was held comfortably upright with the top the head making firm contact with the horizontal head piece.

Weight: A portable weighing machine with an accuracy of 100 gms was used to record the weight of the subjects. Checking the scale with a known weight was done frequently and adjustment to zero was done every time for accurate reading. The Subjects were instructed to stand on the weighing machine with light clothing and without footwear and with feet apart and looking straight and weight was recorded to the nearest value.

Body mass index (BMI): BMI was calculated using the formula (BMI= Weight in kg/height in m²) and classified according to guidelines for cut off points for BMI.⁷

Haemoglobin status: Anaemia was assessed by estimating Hb levels of the study population by cyanmeth hemoglobin calorimetry and classified according to WHO guidelines for diagnosis and assessment of severity of anaemia.⁸

Permission from the Deputy Director of Social Welfare was obtained for conducting the study. The wardens were interviewed and, hostel registers were investigated to secure information regarding the number of residential children.

Detailed information was taken using a semi structured pretested questionnaire. Girls were examined in the presence of female social health worker. Weekly visits to the respective hostels were made at evening hours as children were available after school hours and children were explained about this study and data was collected from all the students after detailed and through history and clinical examination.

Environmental conditions of the hostel which they are residing were assessed after thorough inspection of all the environmental conditions like room's ventilation, water supply, kitchen and food storage facilities, bathrooms and sanitation. Inspection of the surrounding environment of the respective hostels was also made to assess the sanitary conditions.

Data analysis

Data was analyzed using statistical software SPSS v.20. The analyzed data was represented in rates, proportions, tables and charts. Chi Square test was used to test the significance. P<0.05 was considered as statistically significant.

RESULTS

Majority of the study group belonged to the age 13-15 (56.7%) followed by age group of 10-12 yrs (31.7%). Majority of the study population were females (55.8%) and males were 44.2%. Coming to residence, 26.6% children hailed from urban area as compared to 73.4% of children from rural area.

Nutritional status

In this present study body mass index (BMI) is classified as underweight, overweight and normal. And prevalence

of underweight is seen in (70.2%) of the study population and prevalence of underweight was more in boys compared to girls with (27.9%) of boys with grade III thinness as compared to (11.50%) of girls and overall prevalence of underweight of 39.1% which is more in boys as compared to 31.1% girls. Relationship between BMI a gender difference is found to be statistically significant (p<0.05) (Table 1).

Table 1: Sex wise distribution of BMI.

Sex	BMI	Total				
Sex	Grade3	de3 Grade2 Grade1 N		Normal	Total	
Female	36	24	37	77	174	
	11.5%	7.7%	11.9%	24.7%	55.8%	
Male	87	17	18	16	138	
	27.9%	5.4%	5.8%	5.1%	44.2%	
Total	123	41	55	93	312	
	39.4%	13.1%	17.6%	29.8%	100.0%	

Chi-square=65.636, df=3, p=0.001.

In this present study overall prevalence of anaemia was found out to be (97.7%) with girls (53.5%) in and (44.2%) in boys. Majority of study group were moderately anaemic with (63.8%) of total study population falling in this category. Mild anaemia was seen in (20.5%) of the study population and (15.4%) had severe anaemia. All the boys were anaemic and 2.2% of girls are non-anaemic and this was found to be statistically significant

Girls were more anaemic with (53.5%) than boys (44.2%) severe anaemia is seen mostly in girls (10.9%) as compared to boys who are (4.5%). Relationship between Hb levels and gender difference is found to be statistically significant (p<0.05) (Table 2).

Table 2: Haemoglobin levels in the study participants.

Sex		НВ	— Total			
		Severe	Moderate	Mild	Normal	Total
Female	Number	34	108	25	7	174
	Percentage (%)	10.9	34.6	8.0	2.2	55.8
Male	Number	14	85	39	0	138
	Percentage (%)	4.5	27.2	12.5	0.0	44.2
Total	Count	48	193	64	7	312
	% of Total	15.4	61.9	20.5	2.2	100.0

Chi-square=17.212, df=3, p=0.001.

Environmental conditions of the hostels

Overcrowding is seen in all the hostels in which the study has taken place. Less than 10 sq ft per person is observed. All the rooms are adequately ventilated, and lighting was adequate. There are adequate bathrooms and latrines for the hostels. Cooking practices were satisfactory with all hostels having separate kitchen and storage of the food is satisfactory. Sanitation is found to be satisfactory. Solid

Waste disposal is by municipal corporation door to door collection system.

DISCUSSION

In this present study girls were 55.8% and boys were 44.2%. In a study conducted by Alim et al similar findings were observed with 54% of girls and 46% of boys.⁹

Malnutrition

In this present study the prevalence of underweight children was 70.2%. A study conducted by Deb et al similar findings were observed (62.71%), and in other studies done by Osei et al (60.9%), Madhavi (59.8%), Singh (56.6%), Sati et al (55.5%), Semwal (52.6%), Dasgupta et al (47.93%), Rema (30.3%), Deb et al (40.78%), Joshi (26%), Fazili (19.2%), Mushtaq (10%) thinness, Mukherjee (9.87%), Aditya (31.6%) findings were much lower. Significant under nutrition was observed in a study conducted by Shrikanth et al which showed associations between BMI and undernutrition. In other study conducted by Ghalib prevalence of thinning was found to be between (42-75.4%).

In this study prevalence of underweight was seen in 70.2% of the study population which was more in boys (39.1%) as compared girls (31.1%) which was found to be significant. In another study conducted by Deb et al prevalence of underweight was seen in boys was (40.78%) and girls was (25.93%) which is similar to this study.² In another study conducted by Aditya et al, the prevalence of underweight was more in boys (32.3%) when compared to girls (30.6%).²⁰ Madhavi et al conducted a study and reported that boys (66.7%) were more malnourished than girls (52.5%) which was similar to our study.¹¹

Anemia

In this present study prevalence of anaemia was found to be 97.7%, which is very higher and significant than all other studies like Charuhas et al (80.8%), Pise et al (75.1%), Gangadharan et al (40.6%), Berad et al (43.88%), Sudhagandhi et al (52.88%), Shakya et al (58%), Haldar et al (64.4%) and Madhavi et al (28.9%). Il.20,23-28

In this present study prevalence of anaemia was found more in girls with 55.8% of girls were anaemic and boys 44.2% are found to be anaemic. In other study by Madhavi similar findings were observed with girls (65.35%) were anaemic than boys (34.65%). In other study conducted by Pise et al 84.4% of girls and 62.7% of boys were suffering from anemia which is very high when compared to our study. 24

Environmental factors

In this present study overcrowding was seen in all the hostels in which the study has taken place. In a study conducted by Majra et al (90%) overcrowding was reported in schools, and in other study done by Joseph only (30%) of overcrowding was reported. Living rooms in the hostel were adequately ventilated and lighting is adequate. Overcrowding was observed as numbers of inmates were more than the number of rooms. There were adequate bathrooms and latrines for the hostels. Floor is impervious to water. Sanitation was found to be satisfactory. All other the rooms like study

room, and recreation room were well ventilated. Cooking practices were satisfactory with all hostels having separate kitchen and storage of the food was satisfactory. Waste disposal was by public collection system and waste water was disposed into public sewage.

CONCLUSION

This present study was conducted to find the nutritional status of school children belonging to schedule caste who are residing in social welfare hostels and found out overall prevalence of 97.2% in the study population to be anaemic and 70.2% to be underweight. Girls were more anaemic then boys in case of severe anaemia. 100% of boys were anaemic and 2.2% of girls were non anaemic. Majority of study participants had poor nutritional status when body mass index (BMI) was measured but it was more in boys in case of grade III thinness when compared to girls. Overcrowding was observed in these hostels with less than 10 sq.ft. per person. Since the study sample was small concerned only to a section of students belonging to a specific caste much more detailed reports and surveys should be done by the concerned authorities to assess the magnitude of the problem in larger scale.

Recommendations

- To implement the welfare measures much effectively so that it can be fully utilized by the beneficiaries.
- Regular supervision of the hostels by the concerned authorities to improve the living conditions and reduce overcrowding.
- As a high prevalence of anaemia was found among these children so there should be regular iron and folic acid supplementation along with periodic deworming.
- Care should be taken to improve the status of personal hygiene of these school children through coordinated primordial and primary preventive measures like health education.
- Periodic appraisal of hostel staff and parents of the school children' needs to be undertaken in aspects of health of the children.

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Institutional Ethics Committee

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